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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/649,244	08/27/2003	Richard D. Breault	C-2821	6014

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EXAMINER	
DOVE, TRACY MAE	

ART UNIT	PAPER NUMBER
1745	

DATE MAILED: 09/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/649,244	BREAULT, RICHARD D.	
	Examiner	Art Unit	
	Tracy Dove	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 June 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) *1-11* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *12-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *8/27/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement (IDS) submitted on 8/27/03 has been considered by the examiner.

Election/Restrictions

Claims 1-11 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention. Election was made **without** traverse in the reply filed on 6/21/06. Claims 12-21 are drawn to the elected invention.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 12-14, 16, 18, 19 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Stedman et al., US 3,704,172.

Stedman teaches a fuel cell stack 2 having adjacent cells 4, 6 that are separated by a porous, hydrophobic barrier layer 30. The cell 4 on one side of the barrier layer 30 defines channels for liquid water and the cell 6 on the other side of the barrier layer defines channels for steam (channels not numbered in the Figure). The water and steam flow channels are in vapor communication with each other through the barrier layer. The evaporative cooling means/barrier layer 30 has a liquid inlet 32 and a vapor outlet 34 for open cycle mode operation cooling (2:70-72). As shown in the Figure, liquid enters the fuel cell at inlet 32 and passes through the water

channels, as the water evaporates the steam crosses the barrier 30 (as indicated by the arrow in the Figure) and enters the vapor channels before exiting the fuel cell at vapor outlet 34. The amount of coolant fed to the inlet 32 is a function of the vapor pressure in the outlet 34 of the evaporative cooling means since the vapor pressure is a function of cell temperature (3:43-49). A pressure relief means 36 (vacuum in the steam channel), which may be a pressure relief valve, is disposed in the vapor outlet 34 (3:1-2). A radiator may be used in combination with the evaporative cooling means (3:12-14). The coolant loop including the radiator may include a accumulator 39 and be recirculated through the fuel cell stack.

Thus the claims are anticipated.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 15, 17 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stedman et al., US 3,704,172.

Stedman teaches a fuel cell stack 2 having adjacent cells 4, 6 that are separated by a porous, hydrophobic barrier layer 30. The cell 4 on one side of the barrier layer 30 defines channels for liquid water and the cell 6 on the other side of the barrier layer defines channels for steam (channels not numbered in the Figure). The water and steam flow channels are in vapor communication with each other through the barrier layer. The evaporative cooling means/barrier layer 30 has a liquid inlet 32 and a vapor outlet 34 for open cycle mode operation cooling (2:70-

72). As shown in the Figure, liquid enters the fuel cell at inlet 32 and passes through the water channels, as the water evaporates the steam crosses the barrier 30 (as indicated by the arrow in the Figure) and enters the vapor channels before exiting the fuel cell at vapor outlet 34. The amount of coolant fed to the inlet 32 is a function of the vapor pressure in the outlet 34 of the evaporative cooling means since the vapor pressure is a function of cell temperature (3:43-49). A pressure relief means 36 (vacuum in the steam channel), which may be a pressure relief valve, is disposed in the vapor outlet 34 (3:1-2). A radiator may be used in combination with the evaporative cooling means (3:12-14). The coolant loop including the radiator may include a accumulator 39 and be recirculated through the fuel cell stack.

Stedman does not explicitly state the electrolyte layer is a PEM or the operating temperature of the fuel cell.

However, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because Stedman teaches hydrogen and oxygen are common fuel and oxidant gases utilized in fuel cells. Hydrogen and oxygen gases are the reactants for polymer electrolyte fuel cells. Stedman further teaches different electrolytes known in the art can be utilized in the fuel cell system disclosed and still provide the advantages and features enumerated in Stedman (2:56-67).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is 571-272-1285. The examiner can normally be reached on Monday-Thursday (9:00-7:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

September 1, 2006

TRACY DOVE
PRIMARY EXAMINER